CLAIMS

1. A moving magnet type linear actuator comprising:

a stator having a stator base and an armature including a magnetic iron core fixed on the stator base and an armature winding wound around the magnetic iron core; and

a movable body having a field permanent magnet arranged oppositely to the magnetic iron core through a magnetic gap and a magnetic holder supporting the field permanent magnet and movably arranged on the stator base, wherein

the magnetic holder is made of a non-magnetic substance,

a magnetic back yoke is arranged on the side opposite to the armature with respect to the field permanent magnet, a width thereof being approximately equal to a width of the field permanent magnet, a length thereof being not smaller than the stroke of the movable body, and both ends thereof in the longitudinal direction being fixed to the stator, and

a gap is formed between the magnetic yoke and the field permanent magnet.

2. The moving magnet type linear actuator according to claim 1, wherein

a scale segment of a linear scale is fixed to the magnetic holder, and

a detecting segment of the linear scale is fixed to the stator base with a gap from the scale segment.

3. The moving magnet type linear actuator according to claim 1 or 2, wherein

two linear guides are arranged in parallel so as to sandwich both sides of the armature,

guide blocks are arranged on each of the linear guides, and

the magnetic holder is fixed on the guide blocks.

4. The moving magnet type linear actuator according to any one of claims 1 to 3, wherein

a slot having a width corresponding to the widthwise space between the guide blocks is machined in the non-magnetic holder, and

the field magnet is fixed in the slot.

5. The moving magnet type linear actuator according to any one of claims 1 to 4, wherein

a stopper mechanism is provide at each of four ends of the two linear guides in parallel.

6. The moving magnet type linear actuator according to any one of claims 1 to 5, wherein

guide pipes for forcible cooling refrigerant are embedded in the stator base.

7. The moving magnet type linear actuator according to any one of claims 1 to 6, wherein

the magnetic back yoke is a laminate of thin electromagnetic steel plates.